

ACCESSION NR: AP4031162

the cross section is finite for double bremsstrahlung but approaches zero for single bremsstrahlung. Furthermore, in this angle region the calculations become simpler because of the transversality of the photons and their zero mass. Expressions are obtained for the limiting cases of low and high energies which are considerably simpler than the general expression. The expression obtained for the cross section is

$$d\sigma = Z^2 \alpha^4 \frac{p_1}{p_1} \frac{e_1 e_2 d\Omega_1 d\Omega_2}{q^4} \frac{dO_1 dO_2}{4\pi^2} U, \quad (1)$$

where

$$U \equiv U_p = e^2 (m^2 + p_1 p_2 + e_1 e_2) + \frac{2(1 + m^2)}{(p_1^2)(p_2^2)} + 2\alpha \quad (2)$$

in the case of parallel k_1 and k_2 , and

Card 2/4

ACCESSION NR: AP4031162

S/0056/64/046/004/1392/1394

AUTHORS: Zazunov, L. G.; Pomin, P. I.

TITLE: Double bremsstrahlung in the case of almost collinear momenta

SOURCE: Zh. eksper. i teor. fiz., v. 46, no. 4, 1964, 1392-1394

TOPIC TAGS: bremsstrahlung, double bremsstrahlung, collinear momenta, Coulomb field, electron scattering, two photon emission, nonrelativistic approximation, ultrarelativistic approximation, parallel momenta, antiparallel momenta, Feynman diagram

ABSTRACT: The cross section for double bremsstrahlung (simultaneous emission of two photons when an electron is scattered in a Coulomb field) is calculated in the case when the energy of both emitted photons are not small and the mutual direction of the momenta of all particles is nearly colinear. This region is of interest because

Card 1/4

ZAZULYA, N. V.

USSR/Statistical Physics - Heat

D-4

Abs Jour : Referat Zhur - Fizika, No 5, 1957, 11478

Author : Zazulya, N.V.

Inst :

Title : Measurement of the Film Thickness in The Condensation of
Water Vapor.

Orig Pub : Sr. In-ta teploenerg. AN SSSR, 1956, No 13, 85-89

Abstract : No abstract.

Card 1/1

PYATLIN, Mikhail Petrovich; KORDONSKIY, A.B., otvetstvennyy redaktor;
SMIRNOV, L.V., redaktor izdatel'stva; ZAZUL'SKAYA, V.F., tekhnicheskii redaktor

[Mine surveying during mine construction] Marksheiderskie raboty
pri stroitel'stve shakht. Moskva, Ugletekhizdat, 1956. 175 p.
(Mine surveying) (MLRA 9:9)

ZAZUL'SKAYA, V.F.

TOTMAKOV, Anatoliy Vasil'yevich; KIRZHNER, D.M., otvetstvennyy redaktor;
SUROVA, V.A., redaktor izdatel'stva; ZAZUL'SKAYA, V.F., tekhnicheskii redaktor

[Materials and technical equipment supply in the coal mining industry]
Material'no-tekhnicheskoe snabzhenie v ugol'noi promyshlennosti.
Moskva, Ugletekhizdat, 1956. 35 p. (MLRA 10:4)
(Coal mines and mining--Equipment and supplies)

MOSIN, Nikolay Ivanovich; BOLTAYEVA, M.F., red.; ZAZUL'SKAYA, V.F.,
tekhn. red.

[Manufacture of rubber footwear]Proizvodstvo rezinovo obuvi.
Izd.2., perer. i dop. Moskva, Goskhimizdat, 1962. 333 p.
(MIRA15:11)

(Boots and shoes—Rubber)

R9AM

ZAMUNDO (V. K.) & SRINIVASA (Mme G. M.). Mosaic of winter wheat. U.S. Anal. Sci. U.S.S.R., XIV, 9, pp. 790-800, 1 fig., 1 map, 1959.

Mosaic of wheat [R.A.M., xv, p. 436; xvii, p. 297] is stated to have been recorded lately from many parts of the U.S.S.R., chiefly from the central regions, but also the south, including almost all provinces in which winter wheat is grown. The disease is most prevalent in the Voronezh province, where it occurs each year, attacking under favorable conditions up to 15 to 20 per cent. of the plants and reducing the yield by 40 to 80 per cent. The diseased plants show necrosis of the phloem, under-development and reduction of the plastids, nuclear hypertrophy and an increase in the number of nucleoli, and the formation of vacuolar inclusions within the cells. The content of starch and soluble carbohydrates was higher in diseased plants (4-97 and 17-13 per cent., respectively, of the dry weight) than in healthy ones (3-62 and 14-34 per cent.), but the amount of nitrogen was the same. All attempts to transmit the virus by mechanical means were unsuccessful. In transmission experiments with insects *Deliothyphlus striatus*, fed first upon diseased plants and then upon healthy ones, transmitted the disease to 56 out of 60 plants in one experiment, to 29 out of 123 in another, and to 32 out of 41 in a third, the incubation period being 15 to 18 days. A comparison of the disease under investigation with other virus diseases of cereals in the U.S.S.R. showed it to have many properties in common with the papation disease of oats [ibid., xvii, p. 686], from which it differs, however, in the absence of protein crystals from the cells of mosaic plants, the different vector, and the longer incubation period.

DODONOV, N.T.; ZAZULINA, Z.A.

Acid-resistant gland packing made of fluorlon fiber.
Khim.prom. no.4:339 Je '60. (MIRA 13:8)
(Packing(Mechanical engineering))

Acidproof Fluorlon Packings

S/064/60/000/004/017/021/XX
B013/B060

decreasing elasticity and changes of weight. The results obtained indicate that Fluorlon packings are extremely stable against the action of aggressive media. Fluorlon packings were tested in petroleum- and chemical plants. In sulfuric media these packings withstood an uninterrupted service period of six months. Under these conditions, other packings, by contrast, are worn out after 15 days at most. The relatively high price of Fluorlon packings is compensated by their long service life. There are 2 tables. ✓

Card 2/2

S/064/60/000/004/017/021/XX
B013/B060

AUTHORS: Dodonov, N. T., Zazulina, Z. A.

TITLE: Acidproof Fluorlon Packings

PERIODICAL: Khimicheskaya promyshlennost', 1960, No. 4, p. 75

TEXT: This is a report on the use of Fluorlon fibers for packings. These fibers are characterized by a low coefficient of friction, a high mechanical strength, and a high "elementary number" of the individual fibers, which guarantees their good packing properties. As for its resistance to the action of aggressive media, Fluorlon outruns such synthetic substances as Chlorin and Nitron, as may be seen from results obtained from tests in different media at 20°C in the course of 60 days. Stuffing-box packings made of Fluorlon are impregnated with a fluoro ethylene-4-suspension or with fluoro carbon mixtures. For a comparison, packings made of Fluorlon, of impregnated asbestos of the АП (AP) type, as well as acidproof KNC-1 (KPS-1) packings were lab-examined in mineral acids at 80°C. Their quality was evaluated on the basis of

Card 1/2

The Production of the Polymethacrylonitrile-Fiber
and the Investigation of Its Properties

SOV/64-58-5-2/21

1. Cyanides--Polymerization 2. Fibers--Properties 3. Hydrogen--Chemical
reactions 4. Fibers--Applications

Card 3/3

The Production of the Polymethacrylonitrile-Fiber
and the Investigation of Its Properties

SOV/64-58-5-2/21

for PMAN, and the acetonecyanhydrine was dehydrogenized with P_2O_5 , while polymerization was carried out according to the static method.

Working conditions are given by which a product with a molecular weight of 400000-600000 was obtained and the latter was determined by viscometric measuring and the equation developed by Staudinger. In acetone the product was dissolved, on which occasion a strong influence could also be observed to be exercised by the character of the solvent. In comparing the properties of the fiber of PMAN and PAN it was observed that the thermal resistance as well as the chemical of the former is much lower. The light-resistance, the mechanical properties, as well as the modulus of elasticity are also lower with PMAN than with PAN, so that it may be assumed that the substitution of hydrogen by the methyl-group in acrylonitrile leads to a decrease of intermolecular interaction and also to an abrupt change of the properties of the polymer. The fiber obtained is apparently of no practical use. There are 2 tables and 5 references, 3 of which are Soviet.

Card 2/3

AUTHORS: Rogovin, Z. A., ~~Zazulina, Z. A.~~, SOV/64-58-5-2/21
Mratsinkovskaya, R. N., Sergeyenko, D. I.

TITLE: The Production of the Polymethacrylonitrile --- Fiber and the Investigation of Its Properties (Polucheniye volokna iz polimetakrilonitrila i issledovaniye yego svoystv)

PERIODICAL: Khimicheskaya promyshlennost', 1958, Nr 5, pp. 267 - 269 (USSR)

ABSTRACT: Quite a number of experiments relating to the use of copolymers, which are e.g. soluble in acetone have been carried out, for the polyacrylonitrile-fiber, which is, at present, one of the most common due to its good properties in practical use, on the other hand has the disadvantage that the use of a solvent, dimethylformamide, which is comparatively not easily accessible, is necessary. In this series, the derivative mentioned in the title is investigated in the present paper, in connection with which theoretical problems about the influence exercised by the chemical structure on the properties of the polymer can be solved at the same time. Kern and Fernow (Ref 3), as well as Hunyar, Reichert and Fark (Ref 4) have already carried out experiments with polymethacrylonitrile (PMAN) and polyacrylonitrile (PAN). Acetone and HCN were used as initial raw materials

Card 1/3

Elaboration of Methods for Producing New Types of Synthetic Fibers

153-58-1-21/29

vestigation of the methods of production and of the properties of these synthetic fibers. It was further proved that the use of polymetakrylonitryl is not very suitable for the manufacture of synthetic fiber (see table 6). The synthetic fiber MTI-2 is most resistant against chemical reagents. In this respect it beats all other known natural- and synthetic fibers. See tables 7, 8 and 9 for the principal properties of the synthetic fiber MTI-2. There are 10 tables and 9 references, 8 of which are Soviet.

ASSOCIATION: Moskovskiy tekstil'nyy institut (Moscow Textile Institute) Kafedra iskusstvennogo volokna (Chair of Synthetic Fiber)

AUTHORS: Rogovin, Z. A., Zazulina, Z. A. 153-58-1-21/29

TITLE: Elaboration of Methods for Producing New Types of Synthetic Fibers (Razrabotka metodov polucheniya novykh tipov sinteticheskikh volokon)

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Khimiya i khimicheskaya tekhnologiya, 1958, Nr 1, pp. 137-146 (USSR)

ABSTRACT: From the investigations carried out up till now in the USSR in view of producing new synthetic fibers, 2 types are above all of special interest: The production from modified polymers and copolymers of acrylonitril. Consequently: The obtaining of the fiber MTI-1 from the copolymer of acrylonitril and vinylidenechloride- and the fiber MTI-3 from polymet-akrylonitril. (See tables 1 to 3 in this connection). The manufacture of the synthetic fiber MTI-2 (called "Ftorlon") has a great advantage: It produces a fiber of very great resistivity, also with respect to chemistry. This result was obtained by a comparative in-

Card 1/2

ZAZULINA, Z.A.; MARTSINKOVSKAYA, R.N.; ROGOVIN, Z.A.

Synthetic fiber "ftorlon". Tekst. prom. 17 no.5:6-7 My '57.
(Textile fibers, Synthetic) (MLRA 10:6)

ZAZULINA Z.A.

IMMERGUT, H.G. [Immergut, H.]; MARK, G. [Mark, H.]; ZAZULINA, Z.A. [translator].

On the grafted and block-copolymers from synthetic and natural macromolecules. Usp. khim. i tekhn. polim. no.2:237-251 '57. (MIRA 11:1)
(Polymerization)

ILLEGIBLE

ZAZULINA, Z. A., Aspirant

"Investigations in the Field of 'Saniv' Fibre Production." Cand Tech Sci,
Moscow Textile Inst, 25 Nov 54. (VM, 15 Nov 54)

Survey of Scientific and Technical Dissertations Defended at USSR Higher
Educational Institutions (11)

SO: Sum. No. 521, 2 Jun 55

KOSTROV, Yūriy Anatol'yevich; ZAZULINA, Z.A., kand. tekhn. nauk,
dots., nauchn. red.; ~~ISH, N.N., red.~~; OSIROVA, I.M., red.

[Acetyl cellulose fibers] Proizvodstvo atsetiltselluloz-
nogo volokna. Moskva, Vysshaya shkola, 1964. 70 p.
(MIRA 18:2)

L 3275-66
ACCESSION NR: AR5014351

It is noted that the artificial line can more exactly reproduce the processes transpiring in a physical line when the sections with concentrated parameters which make up the artificial line are short. Bibl. 7, figs. 4.

SUB CODE: 1A, EC

ENCL: 00

2/2

L 1275-66 EWT(d)/EWP(v)/EWP(k)/EWP(h)/EWP(1)

ACCESSION NR: AR5014351

UR/0271/65/000/005/A043/A043
621.396.626

SOURCE: Ref. zh. Avtomatika, telemekhanika i vychislitel'naya tekhnika. Svodnyy
ton, Abs. 5A302

AUTHOR: Zaslina, L. P.

TITLE: Artificial overhead line for laboratory investigations of control equipment

CITED SOURCE: Sb. Beskontaktn. sistemy telemekhan. i avtomat. kontrolya. Frunze,
Ilim, 1964, 67-72

TOPIC TAGS: artificial line, supervisory control system

TRANSLATION: Artificial lines are necessary for testing the range of transmission of supervisory-control signals in laboratory investigations of telecontrol systems. Artificial lines also permit studying the deviation of parameters of a signal in a connecting link, which makes the basis for determining the requirements of linear assemblies and of duplex communication between the dispatcher and his controlled stations. An artificial line was built for simulating systems with both concentrated and scattered plants and with an arbitrary configuration of the connecting link.

Cont: 1/2

L 46:10-66

ACC NR: AP6019631

the pulse. An electronic circuit for performing the identification is described in some detail. With the described circuit it is possible simultaneously to record α particles, protons, and γ rays, to record only α particles and protons in the presence of a γ -ray background, or to record only α particles in the presence of protons and γ rays, and to accumulate the pulses in different channels of a pulse height analyzer depending on the energies of the particles. When several kinds of particles are recorded simultaneously, however, a single channel of the analyzer corresponds to different energies for the different kinds of particles. The instrument was tested by recording the α particles, protons, and γ rays from an aluminum target bombarded with 6.6 MeV protons, and the recorded spectra, as well as discrimination curves, are presented. The instrument has proved to be satisfactory in some 18 months of operation. Orig. art. has: 6 figures.

SUB CODE: 20,09¹⁸

SUBM DATE: 00

ORIG. REF: 002

OTH REF: 005

Card 2/2 a/s

L 46310-66 EWT(m)

ACC NR:

AP6019631

(A, V)

SOURCE CODE: UR/0048/66/030/002/0343/0348

AUTHOR: Mikhaleva, T.N.; Zazulin, V.S.; Chuprunov, D.L.; Titov, V.I.

8

ORG: Scientific Research Institute of Nuclear Physics, Moscow State University im. M.V. Lomonosov (Nauchno-issledovatel'skiy institut yadernoy fiziki Moskovskogo gosudarstvennogo universiteta)

B

19
TITLE: A scintillation spectrometer with charged particle discrimination /Report, Fifteenth Annual Conference on Nuclear Spectroscopy and Nuclear Structure, held at Minsk, 25 January to 2 February 1965/

SOURCE: AN SSSR. Izvestiya. Seriya fizicheskaya, v. 30, no. 2, 1966, 343-348

TOPIC TAGS: scintillation spectrometer, gamma spectrometer, proton spectrometer, alpha particle spectrometer, gamma ray, ~~gamma background~~, ~~proton~~, ~~alpha particle~~

ABSTRACT: There is described a scintillation spectrometer employing a single CsI(Tl) crystal and a single photomultiplier with which pulses due to α rays, protons, and α particles can be distinguished, identified, and recorded in different channels of a multichannel pulse analyzer, depending on the energies of the particles producing them. The technique for identifying the particles is based on the fact that the current pulse on a dynode of the photomultiplier has the form of a decreasing exponential, of which the time constant depends on the nature of the particle producing

Card 1/2

VASIL'YEV, S.S.; MIKHALEVA, T.N.; RUDEMKO, N.P.; SEVAST'YANOV, A.I.;
ZAZULIN, V.S.

Long-lived isotope Al^{26} in structural aluminum used in a nuclear
reactor. Atom. energ. 11 no.4:401-403 O '61. (MIRA 14:9)
(Aluminum--Isotopes) (Nuclear reactors)

24.6810

82885
S/120/60/000/02/016/052
E140/E335

AUTHORS: Mikhaleva, T.N. and Zazulin, V.S.

TITLE: Simultaneous Registration of True and Random Coincidences

PERIODICAL: Pribery i tekhnika eksperimenta, 1960, No 2, pp 64 - 68 (USSR)

ABSTRACT: A system based on information published in 1947 by Curren and Rae (Ref 3) was used, in which one pulse channel has delay and the other has a pulse doubler. Both delay and pulse separation are variable, using univibrators. There are 4 figures and 3 English references.

ASSOCIATION: Nauchno-issledovatel'skiy institut yadernoy fiziki MGU (Scientific-Research Institute for Nuclear Physics of MGU)

SUBMITTED: December 29, 1958

Card 1/1

AKISHIN, A.I.; ZAZULIN, V.S.

Use of a quartz resonator in checking the thickness of films
produced in a vacuum. Prib. i tekhn. eksp. 8 no.1:152-154 1963
'63.

1. Nauchno-issledovatel'skiy institut yadernoy fiziki Moskovskogo
gosudarstvennogo universiteta.
(Solid films--Measurement) (Oscillators, Crystal)

TEPLOV, I.B.; ZAZULIN, V.S.; FATEYEVA, L.N.

Telescope for studying nuclear reactions. Vest. Mosk. un. Ser. 3: Fiz.,
astron. 18 no.6:3-12 N-D '63. (MIRA 17:2)

1. Nauchno-issledovatel'skiy Institut yadernoy fiziki Moskovskogo
gosudarstvennogo universiteta.

ACC NR: AP7002593

(A, N)

SOURCE CODE: UR/0413/66/000/023/0100/0101

INVENTORS: Gromyko, V. Ya.; Dobrov, N. A.; Zazulin, V. A.; Aslanyan, E. V.; Semin, N. A.

ORG: none

TITLE: An assembly for checking the efficiency of an aircraft engine. Class 42, No. 189230 [announced by Central Institute of Aircraft Engine Construction (Tsentral'nyy institut aviatsionnogo motorostroyeniya)]

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 23, 1966, 100-101

TOPIC TAGS: aircraft engine, engine control system, aircraft engine instrument

ABSTRACT: This Author Certificate presents an assembly for checking the efficiency of an aircraft engine. This assembly contains gauges, gauge commutators, a voltage-to-code converter, memory units for the upper and the lower ranges, digital comparators, an electromagnetic static frequency multiplier, a directing device, a control panel, and a data output device. To increase the speed of the assembly and to lower the dynamic losses originating in converting engine revolutions into coded signals, the output coils of the tachometric gauge are connected to the three-phase coils of the static frequency multiplier. The output coils of the frequency multiplier are connected through a key to the input element of the impulse counter.

Card 1/1 SUB CODE: 01, 13/ SUBM DATE: 12Jul65/

UDC: 681.149

0930 2708

ZAZULIN, A., insh.

Efficiency experts are striving for the automation and
mechanization of industry. Muk.-elev. prom. 27 no.9:6-7
S '61. (MIRA 15:2)

1. Leningradskiy mel'nichnyy kombinat im. Lenina.
(Leningrad—Grain milling)

STOJKOV, Nevena, Dr.; ZAZULA, Vladimir, Dr.

Hurler's polydystrophy; case report. Med. arh., Sarajevo 8
no.6:57-66 Nov-Dec 54.

1. Universit. klin.--Sarajevo, sef Prof. Dr. M. Sarvan.
(LIPOCHONDRODYSTROPHY, in inf. & child
case report. (Ser))

STOJKOV, Nevena; ZAZULA, Vladimir; KOSORIC, Dragan

Fate of children treated for basilar meningitis. Srpski arh.
celok. lek. 88 no.1:41-51 Ja '60.

1. Decja klinika Medicinskog fakulteta univerziteta u Sarajevu,
Upravnik: prof. dr Miliwoje Sarvan.
(TUBERCULOSIS MENINGEAL ther.)

YUGOSLAVIA/Electricity - General Problems

G-1

Abs Jour : Ref Zhur - Fizika, No 1, 1958, 1218

of the dynamic capacitor 10^{-15} ohms. High resistance at the input -- 10^{12} ohms; null drift 2.5×10^{-16} amp/hr; thermal noise approximately 5×10^{-15} amp; the time constant is one second at the least sensitive measurement limit, and is five seconds at the limit 5×10^{-15} amp.

Card 2/2

ZAZULA, P.

YUGOSLAVIA/Electricity - General Problems

G-1

Abs Jour : Ref Zhur - Fizika, No 1, 1958, 1218
 Author : Zazula, P.
 Inst : S
 Title : A Modification of the Dynamic Condenser
 Orig Pub : Repts "J. Stefan" Inst., 1955, 2, 61-64

Abs Jour : An electrometer is developed for the measurement of currents on the order of 10^{-15} amp. It employs a dynamic capacitor, the vibrating portion of which is made in the form of a plate measuring $30 \times 15 \times 0.5$ mm, whose long side is fastened to the pole of a dc electromagnet and is made to vibrate with the aid of two cylindrical small electromagnets, located at the corners of the plate. The upper surface of the plate, together with electrodes placed over its corners, forms a dynamic capacitor. The constructed electrometer has the following characteristics: current measurement range 10^{-11} -- 5×10^{-15} amp; insulation

Card 1/2

ZAZULA, P.

ZAZULA, P. Amodification of the dynamic condenser. In English. p. 61

Vol. 2, May 1955

REPORTS

SCIENCE

Ljubljana

So: East European Accession, Vol. 6, No. 3, March 1957

ZAZULA, IVAN
ZAZULA, Ivan

Radioactive water in reactors; their deactivation and removal. Pracovni
lek. 9 no.5:431-439; contd. Nov 57.

1. Ustav hygieny prace a chorob z povolani, odd. ionis, zarení.
(ATOMIC ENERGY,
deactivation & removal of radioactive water, review (Cz))

Zazuk, S.

AID P - 4413

Subject : USSR/Radio
Card 1/1 Pub. 89 - 11/18
Author : Zazuk, S.
Title : Antennas for two-channel reception
Periodical : Radio, 4, 36-39, Ap 1956
Abstract : Following plans for 2-channel programs to be organized
in Moscow, various types of built-in antennas are
discussed.
Institution : None
Submitted : No date

PARNAS, I.K.; ZAZUGA, K.; DAMEROVSKIY, T.

Studies on mud fever in Poland during the period 1955-1957.
Zhur.mikrobiol.epid. i immun. 30 no.3:79-84 Mr '59.
(MIRA 12:5)

1. Iz Gosudarstvennogo instituta trudovoy meditsiny i sel'skoy
gigiyeny i kafedry mikrobiologii Lyublinskoy meditsinskoy
akademii.


(LEPTOSPIROSIS, transm.

natural foci of leptospirosis grippotyphosa
in Poland (Rus))

Spectroscopy of luminescence ...

S/613/61/000/014/007/019
D207/D303

or dislocations. The nature of type I centers was firmly established, but further work is needed on type II centers. Acknowledgment is made to Ch. B. Lushchik for suggesting the subject and directing the work and to R. I. Gindina for help in microscopic measurements. There are 16 figures and 43 references: 29 Soviet-bloc and 14 non-Soviet-bloc. The 4 most recent references to the English-language publications read as follows: D. Barber, K. Harvey and J. Mitchell, Phil. Mag., 2, 704 (1957); H. Etzel and J. Schulman, J. Chem. Phys., 22, 1549 (1954); R. Knox, Phys. Rev., 115, 1095 (1959); Y. Uchida and R. Kato, J. Phys. Soc. Japan, 14, 1408 (1959).



SUBMITTED: July 29, 1960

Card 3/3

Spectroscopy of luminescence ...

S/613/61/000/014/007/019
D207/D303

HAuCl₄ were used to activate the alkali halides. The phosphors formed unstable solid solutions with their activators and, therefore, KBr:Cu, KCl:Cu and KBr:Ag were quenched after heating to 400°C, while KBr:Ag, KCl:Ag and KCl:Au were quenched after heating to 600°C. Absorption spectra were recorded with a spectrophotometer Cφ-4 (SF-4). Emission and excitation spectra were obtained with two SF-4 instruments, one of which was used to select the required emission or excitation wavelengths. Low-temperature measurements were carried out in a metal cryostat, in which temperature could be varied continuously from 100 to 500°K. The authors examined the activator distribution in the phosphors using a microscope MBU (MBI) and a dark field condenser. They also compared the phosphor absorption, excitation and emission spectra with the energy level structure of free Cu⁺, Ag⁺ and Au⁺ ions. The results indicated that the luminescence centers were mainly single Cu⁺, Ag⁺ and Au⁺ ions (type I centers). There were also some centers (type II) composed of these ions associated with crystal defects, such as vacancies

Card 2/3

S/613/61/000/014/007/019
D207/D303

AUTHORS: Lushchik, N. Ye., and Zazubovich, S. G.

TITLE: Spectroscopy of luminescence centers in ionic crystals activated with noble ions (Cu^+ , Ag^+ , Au^+)

SOURCE: Akademiya nauk Estonskoy SSR. Institut fiziki i astronomii. Trudy. No. 14, 1961. Issledovaniya po lyuminestsii, 141-167

TEXT: The authors investigated the absorption and luminescence spectra of KBr, KCl and NaCl activated with Cu, Ag and Au. Comparison of the energy structure of luminescence centers in the phosphors with the structure of free Cu^+ , Ag^+ , Au^+ ions gave information on the nature of these centers. Phosphor monocrystals were prepared either by the Kyropoulos method or by method of diffusion of the activator from gaseous phase. The initial materials were KBr of analytic purity, KCl of special and chemical purities, and NaCl of spectroscopic and chemical purities. AgBr, AgNO_3 , CuCl and

Card 1/3

Polarized luminescence ...

S/613/61/000/014/019/019
D207/D303

tion is due to $^1S_0 \rightarrow ^3P_1$ transitions. The high degree of polarization of KCl:Bi luminescence was due to point defects next to Bi^{3+} ions which impede reorientation of P electron-density "dumb-bells" along C_4 axes. After X-ray radiation of KCl:Bi, the number of Bi^{3+} centers was found to be strongly reduced. Simultaneously new activator centers, Bi^{2+} , appeared in the phosphor. The excitation spectrum of the new centers was peaked in the region of 4.25 eV and the emission band had a maximum at 2.9 eV. Luminescence of Bi^{2+} centers was practically unpolarized; this is in agreement with the absence of polarization of luminescence due to $^2S_{1/2} \rightarrow ^2P_{1/2}$ transitions in free Bi^{2+} ions. Detailed results will be published later. There are 4 Soviet-bloc references. ✓

SUBMITTED: April 29, 1961

Card 2/2

S/613/61/000/014/019/019
D207/D303

AUTHORS: Zazubovich, S. G., Lushchik, N. Ye., and Lushchik, Ch. B.

TITLE: Polarized luminescence of the KCl:Bi phosphor

SOURCE: Akademiya nauk Estonskoy SSR. Institut fiziki i astronomii. Trudy. No. 14, 1961. Issledovaniya po lyuminestsentsii, 292-293

TEXT: The authors investigated the luminescence of the KCl:Bi phosphor and found that Bi^{3+} emission was polarized. The degree of polarization, $P = (I_{\parallel} - I_{\perp}) / (I_{\parallel} + I_{\perp})$, for the 3.5 - 3.9 eV excitation band was not greatly affected by the exciting frequency and reached 0.8. Comparison of the angular dependence of polarization with P. P. Feofilov's theory (Ref. 3: Polyarizovannaya lyuminestsentsiya atomov, molekul i kristallov (Polarized Luminescence of Atoms, Molecules and Crystals), GIFML, Moscow, 1959) showed that fundamental oscillators where linear electric dipoles aligned along C_4 axes, i.e. along the cation-anion direction. The absorption

Card 1/2

Luminescence spectra of ...

S/613/61/000/014/016/019
D207/D303

along the series Tl^+ - Pb^{2+} - Bi^{3+} in contrast to free ions where this energy increases from Tl to Bi. Energies of purely electronic transitions behave in a similar way. This decrease of the transition energies is governed primarily by the activator ion charge and, to a much lesser extent, by the type of the ion. It is known that KCl phosphors activated with the isoelectronic ions In^+ , Sn^{2+} and Sb^{3+} behave in the same way. A theoretical explanation of these observations is to be published by N. N. Kristofel' (Trudy IFA AN ESSR, no. 15, 1961 - in print). It is intended to follow up the present note with a more detailed communication. There are 1 figure and 7 references: 5 Soviet-bloc and 2 non-Soviet-bloc. The reference to the English-language publication reads as follows: A. Glasner and R. Reisfeld, J. Chem. Phys., 32, 956 (1960). ✓

SUBMITTED: February 20, 1961

Card 2/2

S/613/61/000/014/016/019
D207/D303

AUTHORS: Zazubovich, S. G., and Lushchik, N. Ye.

TITLE: Luminescence spectra of centers in crystals activated by isoelectronic ions

SOURCE: Akademiya nauk Estonskoy SSR. Institut fiziki i astronomii. Trudy. No. 14, 1961. Issledovaniya po lyuminestsentsii, 283-285

TEXT: The authors studied emission and excitation spectra of luminescence of KCl:Tl, KCl:Pb and KCl:Bi phosphors in order to find the effect of change from free to bound state on the transition energies of activator ions. KCl:Tl (0.03 mol.% Tl in melt) and KCl:Pb (0.5 mol.% Pb in melt) were grown by the Kyropoulos method. KCl:Bi (0.01 mol.% Bi in melt) was prepared by the Stockbarger-Shamovskiy method in evacuated sealed quartz ampoules. Excitation and emission spectra showed that in KCl phosphors the $^1S_0 \rightarrow ^3P_1$ vibronic (electronic-vibrational) transition energies decrease

Card 1/2

24,3500 (1137,1138,1395)

23334 3/058/61/000/006/020/063
A001/A101

AUTHORS: Lushchik, N.Ye., Zazubovich, S.G.

TITLE: The spectroscopy of impurity centers in alkali-halide crystals activated by noble metal ions

PERIODICAL: Referativnyy zhurnal. Fizika, no. 6, 1961, 164-165, abstract 6V223
("Tr. In-ta fiz. i astron. AN EstSSR". 1960, no. 12, 267 - 270)

TEXT: Spectral characteristics of KCl and KBr single crystals activated by Cu, Ag and Au were investigated. The following spectra of absorption, excitation and emission were obtained: KBr-Cu (100°K), KBr-Ag (100°K), KBr-Au (300°K). In comparison with spectra of phosphors based on KCl, the spectra of KBr-Ag are displaced towards longer wavelengths. A conclusion was drawn from the comparison of impurity center characteristics in crystals and free noble ions: luminescence centers in crystals are ions of Cu⁺, Ag⁺, Au⁺, interacting with the proximate surrounding of the crystalline lattice. Electronic state of noble ions and their interaction with the crystal, change at absorption and emission of light by the centers. It has been found out that main bands of activator absorption correspond to transitions $nd^{10} \rightarrow nd^9(n+1)p$.
N. Maksimova

[Abstracter's note: Complete translation]

Card 1/1

ACCESSION NR: AT4020794

phase of the monocrystal. The phosphors tested contained one type of Sn^{2+} centers. At 290 and 100K the polarization spectra, azimuthal functions of the degree of polarization, degree of polarization as a function of the emission frequency and polarization diagrams of the luminescence of these phosphors were studied. On the basis of an analysis of the polarization characteristics, a determination was made of the nature of the elementary absorptive and emissive oscillators (both linear and circular electrical oscillators). The activator absorption bands were shown to be correlated with electron transitions $1s_0 \rightarrow 3p_1$, $1s_0 \rightarrow 3p_2$, $1s_0 \rightarrow 1p_1$, while the emission bands correspond to $3p_1 \rightarrow 1s_0$ transitions in Sn^{2+} ions located in a crystal field of tetragonal symmetry. "The author wishes to express his deep gratitude to N. Ye. Lushchik for guidance and assistance in the work, and also to Ch. B. Lushchik for suggesting the subject and discussing the results of the work." Orig. art. has: 8 figures, 2 tables and 2 formulas.

ASSOCIATION: Institut fiziki i astronomii AN EstSSR (Institute of Physics and Astronomy, AN EstSSR)

SUBMITTED: 18Jan63

DATE ACQ: 07Apr64

ENCL: 00

SUB CODE: PH

NO REF SOV: 017

OTHER: 003

Card

2/2

ACCESSION NR: AT4020794

S/2613/63/000/023/0038/0060

AUTHOR: Zagubovich, S. G.

TITLE: Polarized luminescence of the mercury-like centers in cubic crystals. Part II.

SOURCE: AN Est SSR. Institut fiziki i astronomii. Trudy*, no. 23, 1963.
Issledovaniya po lyuminesentsii (Research in luminescence), 38-60

TOPIC TAGS: luminescence, phosphor, crystalline phosphor, alkali halide luminescence, polarized luminescence, mercury-like activator, luminescence center optical structure, tin luminescence activator

ABSTRACT: The study of the polarized luminescence of cubic crystals in a sensitive technique for the investigation of the optical structure of the luminescence centers in crystalline phosphors and of the electron-vibrational processes which take place in these centers. Together with Ch. B. Lushchik and N. Ye. Lushchik, the author, in previous work, used polarization methods to study the impurity centers of luminescence in alkali halide crystals activated with mercury-like ions. The present paper is devoted to a detailed study of the polarization characteristics of tin-activated KCl, KBr and KI crystals. Used as objects of the investigation were KCl-Sn, KBr-Sn and KI-Sn monocrystals with a tin concentration of 0.01 - 0.001 mol. %, superficially activated by diffusion from the gas

Card 1/2

L 19962-63
ACCESSION NR: AP3007276

tor centers in crystal phosphors and electron transitions in the free ions of the activator. Orig.art.has: 4 figures and 1 table.

ASSOCIATION: none

SUBMITTED: 02Jan63

DATE ACQ: 09Oct63

ENCL: 00

SUB CODE: PH

NO REF SOV: 023

OTHER: 007

Card 3/3

L 19962-63

ACCESSION NR: AP3007276

means of a photoelectric set-up described earlier (Ch.B.Lushchik, P.I.Gindina, S.G. Zazubovich and N.Ye.Lushchik, Trudy Inst.fiz i astr., AN ESSR, No.17,38,1961, and other publications of the Institute of Physics and Astronomy of the Estonian SSR Academy of Sciences). Polarization diagrams are given for three typical KCl phosphors. The experimental data were used to plot energy diagrams of the low-lying levels of the mercury-like ions and the electron transitions in fields of different point group symmetry, making use of H.Dethle's theory (ANN Phys., 3, 133, 1929) predicting the spectral characteristics of ions located in crystal fields of different symmetry. Certain similarities between the spectra are noted and some luminescence bands are associated with specific electron transitions in the free-mercury-like ions. Depolarization of the luminescence of impurity centers of one type may be attributed to 1) reorientation during the excited lifetime of the center of the electron cloud relative to the source of the low-symmetry field in which the ion is located and 2) reorientation of the electron cloud and of the low-symmetry field source along different C_4 crystallographic axes. Both processes require an activation energy, but only the former may be accompanied by change in energy of the state from which the radiative transition departs. The main result of the study, which the authors hope will be substantiated but not invalidated by further research, is that there exists a genetic relationship between the spectra of activa-

Card 2/3

L 19962-63

EWT(1)/EWP(q)/EWT(m)/EWP(B)/BDS--AFFTC/ASD--JD

ACCESSION NR: AP3007276

S/0051/63/015/003/0381/0388

AUTHOR: Zazubovich, S.G.; Lushchik, N.Ye.; Lushchik, Ch.B.

TITLE: Optical structure of luminescence centers in ionic crystals activated by mercury-like ions

SOURCE: Optika i spektroskopiya, v.15, no.3, 1963, 381-388.

TOPIC TAGS: luminescence center, halide phosphor, KCl, KBr, KI, activator

ABSTRACT: The present work is devoted to consideration of polarization effects in alkali halide crystals activated by mercury-like ions and discussion, in the light of the results, of the structure of luminescence centers in such crystals. The experiments were carried out on single crystals, grown by the Kyropolous and Stockbarger techniques, of KCl doped with small amounts of Ga, Ge, In, Sn, Tl, Pb and Bi and KCl, KBr and KI doped with Sn. The specimens were heat treated before the measurements; the impurity concentrations, as determined from the absorption spectra, varied in the range from 0.001 to 0.01 mole percent. The energy positions of the absorption bands of the KCl crystals agreed with the data in the literature. The polarization spectra (several are reproduced in the text) were recorded by

Card 1/3

Alkali halide phosphors ...

S/613/61/000/017/004/011
D051/D113

of single-crystal growth (I.M.Shamovakiy, L.M.Rodionova, A.S.Glushkova, Izv. AN SSSR, ser.fizich., 22,3,1958). It was found that the luminescence centers in KCl-BI are Bi^{3+} ions which are effective trapping centers for electrons. The Sb-activated phosphors showed complex luminescence center structure. The regularities in the spectra of KCl crystals activated by the isoelectronic ions Tl^+ , Pb^{2+} , Bi^{3+} and In^+ , Sn^{2+} , Sb^{3+} are discussed. Ch.B.Lushchik and E.S.Tisler are thanked for help rendered. There are 10 figures. The most important English-language reference is: A.Douglas, D.Hartree, W.Runciman, Proc.Roy.Soc., 51, 486, 1955.

SUBMITTED: April 27, 1961

S/613/61/000/017/004/011
D051/D113

24.2500 (1137, 1138, 1163)

AUTHORS: Zazubovich, S.G., and Lushchik, N.Ye.

TITLE: Alkali halide phosphors activated by bismuth and antimony
SOURCE: Akademiya nauk Estonskoy SSR. Institut fiziki i astronomii.
Trudy, no. 17, 1961. Issledovaniya po lyuminatsentsii, 50-66

TEXT: The study was conducted so as to obtain and examine spectroscopically alkali halide crystals activated by bismuth and antimony. The principles governing the preparation of the phosphors were: small activator concentrations and high temperatures for obtaining solid solutions of $KCl \cdot BiCl_3$ and $KCl \cdot SbCl_3$ systems, quick cooling of the systems in order to oversaturate the solid solutions, increase in the solubility of the trivalent activators by simultaneously introducing bivalent negative ions (e.g. S^{2-}) intended to compensate the excess positive charge of the activator ions. On this basis, the single-crystal phosphors $KCl-Bi$, $NaCl-Bi$, $KBr-Bi$ and the phosphor $KCl-Sb$ were obtained, using for the Bi-phosphors the Stokbarger-Shamovskiy method

Card 1/2

Polarised luminescence of the ... S/613/62/000/018/001/013
E039/E120

along the C_4 axis (z axis) of the crystal. Polarised luminescence is observed along the y axis perpendicular to the exciting light. Measurements are made on these phosphors using different filters and the absorption and emission spectra are also obtained. The azimuthal dependence of the degree of polarisation shows that the oscillations of the Sn^{++} and Pb^{++} centres are orientated along the C_4 axis. The polarisation spectra have complex structures and are shown to be correlated with the activator absorption spectra. The polarisation diagram of KBr-Sn, measured for the long-wavelength absorption band corresponds to that of absorption and emission by electric linear oscillators ($\pi_e - \pi_e$). An analysis of the polarisation characteristics permits of a more accurate interpretation of the electronic structure of the spectra of mercury-like centres. There are 8 figures and 1 table.

SUBMITTED: December 29, 1961

Card 2/2

S/613/62/000/018/001/013
E039/E120

AUTHORS:

Zazubovich, S.G., Lushchik, N.Ye., and Lushchik, Ch.B.

TITLE:

Polarised luminescence of the mercury-like centres of cubic crystals. I.

SOURCE:

Akademiya nauk Estonskoy SSR. Institut fiziki i astronomii. Trudy. no.18. 1962. Issledovaniya po lyuminestsentsii. 3-22

TEXT:

The polarisation characteristics of the Sn^{++} and Pb^{++} centres in alkali halide phosphors are investigated in detail and the relative literature is reviewed. Single crystals are grown from solutions using "spectroscopically pure" NaCl and "specially pure" KCl, KBr and KI. The concentrations of impurity centres, estimated from the absolute value of the absorption coefficients, are in the range 0.001 to 0.01 mole%. Phosphors activated by Sn and Pb form unstable solid solutions, hence before measuring they are quenched by rapidly cooling from a temperature of 650-700 °C to 20 °C. Polarisation spectra of the crystals are measured at 293 and 100 °K. The exciting light is incident, normal to the (100) plane along the x axis, the electric vector being orientated

Card 1/2

Polarization characteristics ...

S/613/61/000/017/003/011
D051/D113

in certain metal fluorides. It was shown that the emission of the main luminescence centers at 293° K is not polarized in most phosphors. The luminescence centers in KCl-Bi and NaCl-Ag phosphors reveal a strong polarization of luminescence. Azimuthal dependences of the degree of polarization show that the oscillators are oriented along the C_4 axes. It is doubtful whether such an orientation testifies to an anion defect near the activator. The polarization diagram of KCl-Bi corresponds to that of absorption and emission by electric linear oscillators. The polarization spectra of KCl-Bi, NaCl-Ag, KCl-Tl, and NaCl-Tl were investigated and discussed. There are 6 figures. The most important English-language reference is: C.Click, W.Compton, Phys.Chem. Solids, 7, 170, 1958;

SUBMITTED: April 21, 1961

Card 2/2

30085
S/613/61/000/017/003/011
D051/D113

243500 (1137, 1138, 1163)

AUTHORS: Lushchik, Ch.B., Gindina, R.I., Zazubovich, S.G., and
Lushchik, N.Ye.

TITLE: Polarization characteristics of some alkali halide crystal
phosphors

SOURCE: Akademiya nauk Estonskoy SSR. Institut fiziki i astronomii.
Trudy, no. 17, 1961. Issledovaniya po lyuminesentsii, 38-49

TEXT: The polarization characteristics of the luminescence of alkali halide
crystals activated by mercury-like (Ga^+ , In^+ , Tl^+ , Pb^{++} , Bi^{+++}) and noble
(Cu^+ , Ag^+ , Au^+) ions were investigated. The study was conducted so as to
explain how far activator ions interact with different types of crystal de-
fects and whether these defects spread to luminescence centers whose "core"
is composed of mercury-like and noble ions. The polarization method em-
ployed was developed by P.P.Feofilov who used it to reveal the anisotropy
of colored centers and luminescence centers established by rare earth ions

Card 1/2

243500

S/058/62/000/004/051/160
A058/A101

AUTHORS: Zazubovich, S. G., Lushchik, N. Ye., Lushchik, Ch. B.

TITLE: Polarized luminescence of KCl-Bi phosphor

PERIODICAL: Referativnyy zhurnal, Fizika, no. 4, 1962, 52, abstract 4V390
("Tr. In-ta fiz. i astron. AN EstSSR", 1961, no. 14, 292-293)

TEXT: Incident to excitation of KCl-Bi by linearly polarized light, polarized luminescence of Bi^{3+} centers was observed. Comparison of the azimuthal dependence of the degree of polarization with Feofilov's theory gave evidence that the elementary oscillators are oriented along the C_4 axes, i.e., in the cation-anion direction. It follows from comparison of the polarization diagram with Feofilov's theory that the elementary oscillators are linear electric dipoles at absorption and emission. The high degree of polarization is explained. After irradiation of KCl-Bi phosphor the number of Bi^{3+} centers decreases sharply; the luminescence of nascent Bi^{2+} centers is weakly polarized.

V. Kosikhin

[Abstracter's note: Complete translation]

Card 1/1

24-3500

38166

S/058/62/000/004/049/160
A058/A101

AUTHORS: Zazubovich, S. G., Lushchik, N. Ye.

TITLE: Spectra of luminescence centers in single crystals activated with isoelectronic ions

PERIODICAL: Referativnyy zhurnal, Fizika, no. 4, 1962, 52, abstract 4V388
("Tr. In-ta fiz. i astron. AN EstSSR", 1961, no. 14, 283-285)

TEXT: The authors investigated the excitation and emission spectra for electronic-vibrational $^1S_0 \leftrightarrow ^3P_1$ transitions in KCl crystals activated with Bi^{3+} , Sb^{3+} , Pb^{2+} and Tl^+ . It was found that if in the series of free $Tl^+ \rightarrow Pb^{2+} \rightarrow Bi^{3+}$ ions the excitation and emission bands are shifted to the higher-frequency side, in the series of KCl phosphors with $Tl^+ \rightarrow Pb^{2+} \rightarrow Bi^{3+}$ additions the opposite effect is observed. On the basis of these data the authors conclude that the decrease in energy of electron transitions in the phosphors as compared with the free ions is chiefly determined by the charge of the activating ion, and that the static interaction of a luminescence center with the crystal lattice can be assumed to be proportional to the ion-activator charge. Similar results were obtained for KCl phosphors with isoelectronic activating $In^+ \rightarrow Sn^{2+} \rightarrow Sb^{3+}$ ions.
[Abstracter's note: Complete translation] N. Maksimova

Card 1/1

ZAZUBOVICH, S.G.; LUSHCHIK, N.Ye.; LUSHCHIK, Ch.B.

Electronic vibrational processes and the polarized luminescence of mercurylike centers in cubic crystals. Izv. AN SSSR Ser. fiz. 27 no.5:656-660 My '63. (MIRA 16:6)

1. Institut fiziki i astronomii AN Estonskoy SSR.
(Phosphors—Spectra) (Quantum theory)

L 2835-66

ACCESSION NR: AT5021773

ENCLOSURE: 01

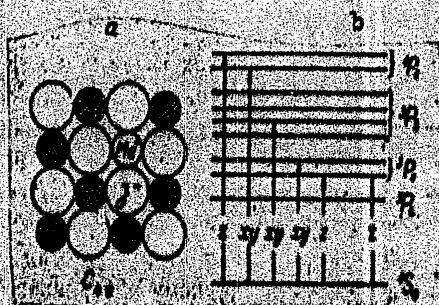


Fig. 1. Most probable model of the Me^+I -luminescence center in $\text{KCl} \cdot \text{XI-Me}$ phosphors - (a), and energy level scheme for mercury-like ions in fields of tetragonal symmetry. ($4v$, $4h$, $2a$ groups (b)). Arrows indicate electron transitions resolved along the x, y, z, axes.

BVA
Card 3/3

L 2835-66

ACCESSION NR: AT5021773

12
 derived by S. I. Vavilov and V. L. Levshin (Zs. f. Phys., 16, 136, 1923). A model for the Metal⁺I⁻ luminescence center in KCl-KI-Metal is presented. On the basis of the observed spectra of the alkali halide crystals activated by In and Ga, an energy level diagram for the luminescence center is proposed (see Fig. 1 on the Enclosure). It was found that the In⁺I⁻ and Ga⁺I⁻ spectra were somewhat shifted with respect to the In⁺ and Ga⁺ spectra respectively, but otherwise were quite similar to the latter. The polarization characteristics of the centers investigated were similar to those of alkali halide crystals activated by tin. The luminescence was found to be polarized by 20-30 per cent. The author thanks N. Ya. Lushchik for her help and advice and Ch. B. Lushchik for suggesting the investigation. Orig. art. has 4 graphs.

ASSOCIATION: Institut fiziki i astronomii, AN EstSSR (Institute for Physics and Astronomy, AN EstSSR)

SUBMITTED: 08Jan64

ENCL: 01

SUB CODE: SS, OP

NO REF SOV: 024

OTHER: 003

Card 2/3

L 2815-66 EWT(1)/EWT(n)/T/EWT(t)/EWT(b) LJP(s) JD/JG/GG
 ACCESSION NR: AT5021773 UR/2613/64/000/028/0020/0034
 AUTHGR: Zazubovich, S. G. 44/45 52
 TITLE: Polarized luminescence of the mercury-like centers in cubic crystals. 3 40
 SOURCE: AN EstSR. Institut fiziki i astronomii. Trudy, no. 28, 1964. Issledovaniya po lyuminescenttsii (Research on luminescence), 20-34 1341
 TOPIC TAGS: luminescence property, luminescence research, luminescence, luminescence spectrum, luminescence yield, luminescent crystal, phosphor, polarization
 ABSTRACT: The spectral and polarization characteristics of the In^+I^- and Ga^+I^- luminescence centers in the $\text{KCl}\cdot\text{KI-In}$ and $\text{KCl}\cdot\text{KI-Ga}$ phosphors, first synthesized in this laboratory, were investigated. The investigation was carried out with the aid of the polarization method of S. G. Zazubovich and Kh. A. Soovik (Trudy, IPA AN EstSR, No. 26, 38, 1964). The spectral characteristics for excitation and luminescence and polarization spectra for various energy intervals from 2-6 eV at 295K and 100K are presented graphically. The actual polarization P was calculated from the observed polarization P_0 by means of the expression

$$P = \frac{2P_0}{1+P_0}$$

 Card 1/3

MOSOLOV, K.V.; RASTOV, V.F.; IVANOV, R.F.; IPPOLITOV, A.G.;
MAREM'YANICHEV, S.N.; DUMCHENKO, N.I., kand. tekhn.
nauk, retsenzent; ZAZERSKIY, Ye.I., inzh., retsenzent;
BARSKIY, M.E., kand. tekhn. nauk, red.

[Fundamentals of the mechanization and automation of
production processes] Osnovy mekhanizatsii i avtomati-
zatsii proizvodstva. Moskva, Mashinostroenie, 1964.
198 p. (MIRA 18:1)

Separation of scandium from tungsten... S/828/62/000/000/014/017
E071/E135

zirconium, titanium, aluminium and beryllium.
There are 2 figures and 7 tables.

Card 3/3

Separation of scandium from tungsten... S/828/62/000/000/014/017
EO71/E135

of $\text{Sc}(\text{OH})_3$ increases. The maximum solubility, 0.12 wt.% of $\text{Sc}(\text{OH})_3$, is obtained at 20 wt.% of Na_2CO_3 and 25 °C. The solubility of $\text{Sc}(\text{OH})_3$ in sodium hydroxide solutions in the range of concentration of 7-45 wt.% at 25 °C was determined. In the lower range of concentration of sodium hydroxide (up to 15 wt.%) the solubility of $\text{Sc}(\text{OH})_3$ is insignificant (~ 0.03 mg Sc_2O_3 per ml of solution). The solubility was highest at 26 and 32.5 wt.% of NaOH, 1.28 and 1.5 mg of Sc_2O_3 per ml of solution. The above studies were used as a basis for the two proposed methods of separation. The carbonate method, proposed for the processing of tungsten residues, comprises: transfer into solution with concentrated sulphuric acid, sodium carbonate treatment, extraction of thiocyanides and precipitation of oxalates. The alkali-carbonate method, proposed for the separation of scandium from slags (from the production of pig iron) comprises: sulphuric acid solution, precipitation with sodium hydroxide, carbonate treatment, extraction of thiocyanides and precipitation of oxalates. As a result of the carbonate treatment 40-70% Sc_2O_3 concentrates are obtained. The main admixtures are thorium, rare earth elements,

Card 2/3

S/828/62/000/000/014/017
E071/E135

AUTHORS: Komissarova, L.N., Shatskiy, V.M., Zazubin, A.I.,
Savrukova, G.D., and Spitsyn, V.I., Academician.

TITLE: Separation of scandium from tungsten and poor
polymetallic iron ores

SOURCE: Razdeleniye blizkikh po svoystvan redkikh metallov.
Mezhvuz. konfer. po metodam razdel. blizkikh po svoyst.
red. metallov. Moscow, Metallurgizdat, 1962, 155-167.

TEXT: As a result of experiments carried out with tungsten
residues and slag, two methods of separation of scandium and
production of a pure scandium oxide (above 99.99%) with an overall
yield of 80-88% production, were developed. The first stage in
both is the transfer of scandium into solution. The best results
were obtained by treating the residues or slag with 98% sulphuric
acid, using a solid to liquid ratio of 1:1, a temperature of
220 °C up to a nearly complete removal of SO₃ vapour (> 4 hours)
and subsequent extraction with water. The solubility of Sc(OH)₃
in Na₂CO₃ solutions of various concentrations was studied at 0
and 25 °C. With increasing concentration of Na₂CO₃ the solubility
Card 1/3

MACHKASOV, Ye. I.; ZAZUBIN, A. I.; KATKOV, Yu. A.; SPIVAK, Yu. M.

Enlarged plant for the drying, hardening, and roasting
of raw materials in a fluidized bed. Trudy Inst. met.
i obog. AN Kazakh. ~~5:130-140~~ '62. (MIRA 15:11)
(Fluidization)

PORUBAYEV, V.P.; PONOMAREV, V.D.; ZAZUBIN, A.I.

Effect of temperature and of current density on the potentials of
a gallium cathode in various electrolytes. Izv. AN Kazakh. SSR.
Ser. tekhn. i khim. nauk no. 1: 50-55 '63. (MIRA 17:3)

PORUBAYEV, V.P.; PONOMAREV, V.D.; ZAZUBIN, A.I.

Cathode polarization of lithium on a gallium cathode. Report No.3.
Izv. AN Kazakh. SSR. Ser. tekhn. i khim. nauk no.2:6-17 '63.
(MIRA 17:2)

ZAZUBIN, A.I.; BARSHCHEVSKAYA, A.N.

Investigation of the distribution of gallium in the process-according
to the flow sheet of the Bayer-sintering processing of high-silicon
bauxites. Trudy Inst.met.1 obog. AN Kazakh.SSR 11:22-23 '64.
(MIRA 18:4)

ZAZUBIN, A.I.; KATKOV, Yu.A.

Interaction of phenacite with calcium carbonate during sintering.
Trudy Inst. met. i obog. AN Kazakh. SSR 12:109-119 '65.

(MIRA 18:10)

SALTOVSKAYA, L.A.; ZAZUBIN, A.I.; ROMANOV, G.A.; YEVDORIMENKO, F.N.;
DUKHANKINA, I.S.

Electrodeposition of gallium on a gallium cathode from industrial
aluminate solutions. Report no.3. Trudy Inst. met. i obzr. AN
Kazakh. SSR 12:49-51 '65. (MIRA 14:11)

ZAZULIN, A.I.; ROMANOV, G.A.; SALTOVSKAYA, I.A.

Electrolysis of gallium with a gallium cathode. Report no. 1.
Trudy Inst. met. i sbog. AN Kazakh. SSR 13:32-40 '65.

Effect of vanadium on the electrodeposition of gallium on a
gallium cathode. Report no. 2. Ibid. 14:3-18

(MIRA 13:10)

TARASENKO, V.Z.; ZAZUBIN, A.I.; BARSHCHEVSKAYA, A.N.

Vanadium distribution in the treatment of hydargillite bauxites
for alumina by the Bayer - sintering method. Trudy Inst. met. i
obog. AN Kazakh. SSR 12:16-22 '55.

(MIRA 18:10)

KATKOV, Ya.A.; STEPURA, V.G.; LAZUDIN, A.I.; PONOMAREV, V.D.

Decomposition of phenazine by sulfuric acid at atmospheric
pressures. Report No.2. Trudy Inst. kkt. i obog. AN SSSR.
SSR 1 :36-40 '65. (MIRA 18/10)

GAZUBIN, A.I.; KATKOV, Yu.A.; PONOMAREV, V.D.

Rate of decomposition of phenacite in sulfuric acid. Izv. Inst.
met. 1 obog. AN Kazakh. SSR 14:24-35 '65. (MIRA 18:10)

LAZUBIN, A.I.; SAVRUKOVA, G.D.

Studying solubility in the system $\text{Co}_2(\text{SO}_4)_3 - \text{Al}_2(\text{SO}_4)_3 - \text{H}_2\text{O}$
at 25°. Trudy Inst. met. i obog. AN Kazakh. SSR 14:15-17 '65.
(MIRA 18:10)

SAVRUKOVA, G.D.; ZAZUBIN, A.I.

Investigating the system $\text{BeSO}_4 - \text{MgSO}_4 - \text{H}_2\text{O}$ at 25 and 60°.

Trudy Inst. met. 1 obog. AN Kazakh. SSR 1419-14 '65.

(MIRA 18:10)

ZAZUBIN, A.I.; BARSHCHEVSKAYA, A.N.

Studying the distribution of gallium during the processing of
high-silicon bauxites by the hydrochemical alkali method. Trudy
Inst. met. i obog. AN Kazakh. SSR 9:103-105 '64. (MIRA 17:9)

LEBEDEV, B.N.; ZAZUBIN, A.I.; LOSHAKOVA, A.K.; IPPOLITOVA, M.V.;
SAVRUKOVA, G.D.

Treatment of lean complex ores. Izv.AN Kazakh.SSR.Ser.met.obog.i
ognoup. no.2:43-49 '60. (MIRA 13:8)
(Ore dressing)
(Nonferrous metals--Metallurgy)

ZAZUBIN, A.I.; LEHEDOV, B.N.

Volatility of silver chloride. Izv.AN Kazakh.SSR.Ser.net.
obog.1 ogneup. no.2:8-20 '60. (MIRA 13:8)
(Silver chloride) (Ore dressing)
(Volatility)

SOV/137-50-7-14607

An Investigation into Application of the Chloride Sublimation Method (cont.)

clarified. It was found that the following are the optimum conditions: Temperature 1000°C, salt from 13-22%, distillation time 90 min. Under these conditions the following are extracted in the sublimate, in %: Pb 98-99, Cu 60-65, Zn 60-67, Au 93, 95, and Ag 92, 97. The Fe undergoes virtually no volatilization; as in the presence of air its chlorides oxidize to Fe_2O_3 .

A.P.

1. Ores--Halogenation
2. Ores--Sublimation

SOV/137-58-7-14607

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 7, p 95 (USSR)

AUTHORS: Zazubin, A.I., Lebedev, B.N.

TITLE: An Investigation Into Application of the Chloride Sublimation Method to the Polymetallic Middlings of the Ore Dressing Plants of the Altay (Issledovaniye po primeneniyu metoda khloridovozgonki k polimetallicheskim promproduktam obogatitel'nykh fabrik Altaya)

PERIODICAL: Izv. AN KazSSR. Ser. gorn. dela, metallurgiya, stroymaterialov, 1957, Nr 4 (15), pp 74-83

ABSTRACT: A description is provided of the results of laboratory experiments in the chlorination and sublimation of chlorides of middlings of the Leninogorsk Dressing Plant having the following % composition: S total 26.45, Pb 3.34, Cu 0.47, Zn 8.38, Au 15.5 grams/ton, Ag 233.2 grams/ton. The middlings were roasted to 6.27% S contents. The matte was mixed with NaCl and heated in a muffle furnace with access of air and subsequent absorption of the sublimation products (chlorides). The influence of temperature, chlorination time, grain size, and amount of NaCl, amount of S, and amount of air intake were

Card 1/2

SOV/137-57-11-20834

Chlorination and Volatilization of Silver in Chloridizing Roasting

by the sulfides FeS_2 , PbS , CuFeS_2 , ZnS , and FeAsS and by the chlorides CuCl_2 , CuCl , and FeCl_3 . The presence of PbSO_4 , CaSO_4 , Ag_2SO_4 , Cu_2S , MgCl_2 , CaCl_2 , Sb_2S_3 , As_2S_5 , PbCl_2 , and MgCl_2 has a smaller effect on the process of Ag chlorination. As the quantity of SiO_2 and Al_2O_3 increases, the percentage of chlorinated Ag rises, attaining 100% at ratios of $\text{Ag}:\text{SiO}_2 = 1:100$ and $\text{Ag}:\text{Al}_2\text{O}_3 = 1:20$.

B.T.

Card 2/2

SOV/137-57-11-20834

Translation from: Referativnyy zhurnal, Metallurgiya, 1957, Nr 11, p 28 (USSR)

AUTHORS: Zazubin, A.I., Lebedev, B.N.

TITLE: Chlorination and Volatilization of Silver in Chloridizing Roasting (Khlorirovaniye i uletuchivaniye serebra pri khloriruyushchem obzhige)

PERIODICAL: Izv. AN KazSSR, ser. gorn. dela, metallurgii, str-va i stroymaterialov, 1957, Nr 1, pp 3-11

ABSTRACT: A study is made of the effects of temperature, NaCl consumption, and the presence of certain metal sulfides, chlorides, and sulfates and of SiO_2 and Al_2O_3 on the chlorination of metallic Ag in an oxidizing atmosphere. The experiments are run with 0.1-g Ag specimens in the 500-1200°C temperature interval. It is established that a change in the NaCl quantity from 2 to 10 times the theoretical requirement has no significant effect upon the degree of Ag chlorination. At 700°, 12% of the Ag is chlorinated, and the completeness of the reaction increases with temperature, attaining 50% at 1200°. In the presence of ZnSO_4 , CuSO_4 , $\text{Fe}_2(\text{SO}_4)_3$, FeSO_4 , and MgSO_4 , chlorination is complete. The same effect is produced

Card 1/2

ZAZUBIN, A.I.; LEKHDEV, B.N.

Kinetics of chlorination of silver and silver sulfide with sodium
chloride in presence of silicon. Izv. AN Kazakh. SSR Ser. gor. dela,
met. stroi. i stroimat. no. 9: 94-104 '56. (MLRA 10:2)
(Chlorination) (Silver--Metallurgy)

ZAZUBIN, A.I.; LEKHDEV, B.N.

Dissociation of sodium chloride in chlorination roasting. Izv.AN
Kazakh.SSR, Ser.gor.dela, met., stroi.i stroimat.no.9:80-93 '56.
(Salt) (Chlorination) (Dissociation) (MLRA 10:2)

ZAZOYEV, A.G. (Yelabuga)

On a remark of A.I. Shavernev. Mat. v shkole no.5:67-68 8-0 '59.
(MIRA 13:2)

(Geometry--Problems, exercises, etc.)

MAYERGOYZ, D.M. (Kiyev); ZAZOYEV, A.G. (Yelabuga); OSIPOVA, M.I.
(Mirom)

Discussion of A.N.Barsukov's book "Algebra," Part 2. Mat.v
shkole no.4:70-81 J1-Ag '59. (MIRA 12:11)
(Algebra) (Barsukov, A.N.)

ZAZOYEV, A.G. (Yelabuga)

Construction of a triangle according to its three heights. Mat v
shkole no.5:70-71 8-0 '60. (MIRA 13:10)
(Geometry--Problems, exercises, etc.)
(Triangle)

ZAZOVSKIY, F.Ia.; KAMENETSKIY, S.G.

Pressure restoration on well bottoms in thinned oil flow. Nefteprom.
delo no.9:6-12 '65. (MIRA 18:10)

1. Vsesoyuznyy neftegazovyy nauchno-issledovatel'skiy institut.

ZAZOVSKIY, F.Ya.; KAMENETSKIY, S.G.

Change in the coefficient of piezoconductivity in an oil reservoir
with a pressure equal to the saturation pressure or close to it.
Nefteprom. delo no.6:3-7 '65.

(MIRA 18:10)

1. Vsesoyuznyy neftegazovyy nauchno-issledovatel'skiy institut.

ZAZOVSKIY, F.Ya.; ILYUKHIN, Ye.S.

Investigating wells under conditions of nonstationary gaseous-liquid flow. Nefteprom. delo no.6:8-12 '64. (MIRA 17:9)

1. Vsesoyuznyy neftegazovyy nauchno-issledovatel'skiy institut.

BOKSERMAN, A.A.; ZAZOVSKIY, F. Ya.; KAMENETSKIY, S.G.

Determining reservoir parameters from the data of an investigation of a nonsteady inflow of a gas-liquid mixture. Neft. khoz. 41 no.7:44-48 J1'63 (MIRA 17:7)

ZAZOVSKIY, F.Ya.

Laboratory and field investigations of nonsteady gas and fluid
flow. Trudy VNI no.40815-34 '63 (MIRA 1787)

BOKSERMAN, A.A.; ZAZOVSKIY, F.A.; KAMENETSKIY, S.G.

Determining the reservoir parameters for a nonsteady
bubble fluid flow to the well bottom. Nauch.-tekh.
sbor. po dob. nefi. no.21:37-42 '63. (MIRA 17:5)

1. Vsesoyuznyy neftegazovyy nauchno-issledovatel'skiy
institut.

BOKSERMAN, A.A.; ZAZOVSKIY, F.Ya.; KAMENETSKIY, S.G.

Determination of reservoir parameters from research data on
the nonstationary flow of gas cut fluid. Nauch.-tekhn. sbor.
po dob. nefli no.19:34-39 '63. (MIRA 17:8)

1. Vsesoyuznyy neftegazovyy nauchno-issledovatel'skiy institut.

VASIL'YEVSKIY, V.N.; ZAZOVSKIY, F.Ya.

Some results of the study of wells using pressure build-up
curves when bottom pressure is below the saturation pressure.
Trudy VNII no.37:223-229 '62. (MIRA 16:6)
(Oil reservoir engineering)